

Sawbones Episode 79: Malaria

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Intro (Clint McElroy):

Sawbones is a show about medical history, and nothing the hosts say should be taken as medical advice or opinion. It's for fun. Can't you just have fun for an hour and not try to diagnose your mystery boil? We think you've earned it. Just sit back, relax, and enjoy a moment of distraction from that weird growth. You're worth it.

[theme song Medicines by The Taxpayers plays]

Justin:

Hello, everybody, and welcome to *Sawbones*, a Marital Tour of Misguided Medicine. I'm your co-host, Justin McElroy.

Sydnee:

And I'm Sydnee McElroy.

Justin:

Sydnee, I'm tired of... something.

Sydnee:

You're tired of something?

Justin:

I'm tired of something and I would like to broach the subject with you now.

Sydnee:

Right now?

Justin:

Mm-hmm [affirmative], this is-

Sydnee:

We ... You know what, you and I really pick the best time-

Justin:

To have these kind of-

Sydnee:

... to have these kind of disputes on our podcast.

Justin:

Well, that's kind of what, that's kind of what I want to talk to you about. Uh, this is like our 80th episode, I think. Something around there. 80 episodes.

Sydnee:

Yeah.

Justin:

And in every episode, we try to come up with, like, a reason, like a, like a, a, a, a conversation that we might have been having that would lead us into the topic of the subject that we're discussing.

Sydnee:

Yeah, it's like a bit that we do.

Justin:

It's like a bit, and you know-

Sydnee:

And you're, you're really messing this one up.

Justin:

Yeah, well, it's exhausting. We spent ... Dear friends, we spent the last three minutes trying to figure out how we might have a conversation-

Sydnee:

Three whole minutes-

Justin:

Three.

Sydnee:

... of our precious time! [laughs]

Justin:

Three minute ... No, I would say upwards of four minutes discussing what conversation we would be having that would lead us into malaria. Friends-

Sydnee:

Now you've given it away. Now it's not a surprise. Now they know we're talking about malaria.

Justin:

Well, that's my intro. There. Now that's the conversation we had that led us into malaria. Friends, we talk about a lot of things here between the two of us and, uh, uh, most of which are, are Charlie-centric, but you would be shocked the, uh, just a wide breadth of topics. Very rarely are we say- are we having any conversations that would take us, uh, uh, into malaria.

Sydnee:

Well...

Justin:

Just like a ... Okay, more, more so being married to you, I would say. We-

Sydnee:

I try to ... uh, but those aren't so much conversations as, like, one-sided monologues.

Justin:

Yeah.

Sydnee:

Like I tell Justin things and he tries not to look, like, glazed over and bored.

Justin:

Sawbones, the podcast. [laughs]

Sydnee:

Hey!

Justin:

Hey, I'm just kidding. Sooner or later, we're gonna talk about malaria.

Sydnee:

Um, if you have a big, big problem with us leaving out our bits-

Justin:

Our classic bits.

Sydnee:

... let us know, otherwise we'll spare you the mock hilarity.

Justin:

I just imagine people at home, like, at, at home, like, "Yeah, I get it. I get what you guys are going for." But if you liked it, if I liked that-

Sydnee:

I thought maybe they would try to guess. Like that's, that would be me. Like, "Oh, they're gonna get into this!"

Justin:

Yeah.

Sydnee:

Is that just me?

Justin:

If you like that part of the show, please let us know, but also, like, write a bunch of them for us because [laughs] I know it seems weird that this took effort, but, like, they do. Anyway, sorry. Sydnee, the, the thing that makes it so hard is, like, I don't, I don't know if malaria's real funny. Like, that's where we get into trouble is, like, what are some good, what are some good ... I was sitting my head here, thinking, like ... I was thinking, like, banging my head against the table thinking, "What are some good malaria jokes?" There aren't any good malaria jokes.

Sydnee:

No. I ... There aren't. I mean, malaria is not, I don't think it's funny. I think it's a fun disease to talk about. Like, people enjoy talking about malaria. It's interesting, I should say. It's got a long history and, um, it's a parasite, which we don't talk about a lot, a people always get a little-

Justin:

Remind me, what, now what, what is a parasite?

Sydnee:

Well, it's a ... some sort of small ... well, it doesn't have to be small. In this case, we're talking about tiny little organisms-

Justin:

Mm-hmm [affirmative]

Sydnee:

... that use something from your system, your nutrients to survive.

Justin:

They wheeze off your juice.

Sydnee:

Right. So they're not, they're not giving you anything, they're not providing you anything, they're just taking from you. And t- they don't have to be small, and usually, when we're talking about parasitology, and, like, human parasites, we're talking about small things. Now, they can be big. There are big giant worms that can come out of your butt, but we're not talking about that today.

Justin:

And monkeys. Monkeys might fly out of your butt, too.

Sydnee:

Nope.

Justin:

That's another concern.

Sydnee:

Nope, not a concern.

Justin:

Uh, did somebody suggest the topic?

Sydnee:

Yes, a lot of people have suggested malaria, because, like I said, a lot of people like to talk about malaria. Uh, Don, David, Leman, Jea- Jean, Jose, Nicholas all suggested this topic.

Justin:

Thanks, y'all.

Sydnee:

Uh-

Justin:

If you, by the way, people asking about this, if you'd like to suggest a topic, you can email sawbones@maximumfun.org.

Sydnee:

So malaria comes from the Italian word for bad air. Mal air.

Justin:

Oh.

Sydnee:

Um, and that was, that was because in, and we'll talk about this more, but a lot of people thought for a long time that the way you got malaria was by inhaling something in the air. It was like kind of, we've talked about before like the miasma theory of disease.

Justin:

Sure.

Sydnee:

Like that it's like there's some kind of illness that's floating around you and you might breathe it in accidentally and get sick, which sometimes it's kind of right, but not with malaria.

Justin:

Right. No, not in this case.

Sydnee:

So like I said, it's caused by a parasite, which we don't talk about a lot, uh, because, and I think it's because in the US, we're, we don't get as ... or we think we don't get as many parasites, but there are parasites that are endemic to the US. Um, malaria used to be.

Justin:

Really?

Sydnee:

Mm-hmm [affirmative]. You used to get malaria in the US. You used to get malaria everywhere. Malaria was a big deal in pretty much, uh, not every country on earth, but almost every country on earth for many years, but the

change in, um, kind of our sanitation and, uh, the big thing whether or not you have a lot of standing water-

Justin:

Mm-hmm [affirmative]

Sydnee:

... for the mosquitoes to, to lay their eggs in. Um, if you don't, you don't have a lot of these mosquitoes and you don't get a lot of malaria and so as, kind of things changed in the US, malaria got pushed further and further south and now we see it mostly in Africa, although it still exists other places.

Justin:

So what does it do?

Sydnee:

So let's talk about malaria the parasite and what it does.

Justin:

Okay.

Sydnee:

Okay, so-

Justin:

Is it single-celled or is it, like, bigger than that?

Sydnee:

It's a little teeny plasmodium.

Justin:

Okay.

Sydnee:

So yes?

Justin:

Yes? Okay.

Sydnee:

No?

Justin:

No.

Sydnee:

No, it's not.

Justin:

Okay.

Sydnee:

No.

Justin:

No.

Sydnee:

I'm gonna go with no.

Justin:

Official no.

Sydnee:

I don't know. I'm a doctor. [laughs]

Justin:

Okay.

Sydnee:

It's a plasmodium. I know all the names. I know what it does to you.

Justin:

Okay.

Sydnee:

It, uh, there's several different, like, flavors of malaria that people get-

Justin:

Hmm.

Sydnee:

... uh, depending on which-

Justin:

Make mine rocky road.

Sydnee:

... which plasmodium infects you. There's falciparum, malariae, vivax, ovale, there's a couple others. Um, it's carried by a certain kind of mosquito, as I've already alluded to, the Anopheles mosquito.

Justin:

Hmm.

Sydnee:

So anywhere that you have Anopheles mosquitoes, conceivably you could have malaria. Uh, it gets into your bloodstream when the mosquito bites you, so that's why I said it's not really from inhaling toxic air. It's specifically from a mosquito bite. Um, and then initially, the parasite will go infect your liver cells.

Justin:

Mm-hmm [affirmative]

Sydnee:

Uh, but from there, it's released into your bloodstream and that's when you start really getting sick. And that's also when we tend to see and diagnose malaria. And there, and there's a lot of, like, if you are the kind of person who likes to look at microscopy pictures?

Justin:

And who isn't?

Sydnee:

Like of, of things you might see if you looked at blood under a microscope?

Justin:

Mm-hmm [affirmative].

Sydnee:

You can see a lot of little shapes like ring forms and little banana-shaped things that under the microscope in somebody's blood who has malaria. Um, some forms can live in you, live in your liver for a long time. Like the vivax and ovale, they can have these little things called hypnozoites, these little

secret things like, um, surprise ... I don't know. Timed ... What am I thinking of? Time mines.

Justin:

What?

Sydnee:

They're like, you know-

Justin:

Like-

Sydnee:

Timed-

Justin:

Like time bombs?

Sydnee:

Yeah. [laughs]

Justin:

Okay, yeah I understand.

Sydnee:

You know, time bombs.

Justin:

You know, time bombs. Got it.

Sydnee:

The word I couldn't come up with. Uh, they live-

Justin:

But were somehow managing to say the two components of, you just couldn't-

Sydnee:

I said mines. I was thinking like Goldeneye, like-

Justin:

Sure, sure, sure, sure, sure.

Sydnee:

Like instead of proximity mines.

Justin:

Well, they had remote mines, but that, I don't think-

Sydnee:

Yes. I'm thinking of remote mines. Well, then no, because you don't-

Justin:

But they're not detonated. Yeah.

Sydnee:

... they don't ... No. They're just, they're just there and then they just-

Justin:

Let's go with time bomb.

Sydnee:

Yeah, and then they explode out of your liver later on after you think you've already gotten over the malaria and you get sick again. Um, you spread them to another person, only if, like, a mosquito bites you and then bites somebody else. So you tend to see kind of outbreaks of it in areas, but it's not person to person so much as mosquito to person.

Justin:

Okay.

Sydnee:

To mosquito to person. The symptoms of malaria, the classic are these cyclical fevers. And this is why, as I'll talk about, we think we've had malaria around for a really long time is because there aren't a lot of illnesses that have this kind of pattern of, like, you get this really high fever, you get really sick, and then it starts to abate. You feel better, almost to the point where you seem like you're totally fine, and then you go through the cycle again.

Justin:

Mm-hmm [affirmative]

Sydnee:

Um, and, and that's been written about all through antiquity and so that's why we think malaria's been around so long. You also get, uh, rigors, so these really awful chills and shakes.

Justin:

Mm-hmm [affirmative]

Sydnee:

Uh, get anemic, you get headaches, uh, you feel really, really lousy when you have malaria. And then there are, like, really severe complications that can happen. Not to everybody, but especially if you get the, the falciparum variety, you can get, uh, fluid in your lungs, like, pulmonary edema. Your spleen can get really big. It can even rupture. Uh, you can go into renal failure, which kidney failure, you can go into shock. It's really bad for pregnant women to get malaria. There are lots of complications.

So malaria can be something that just makes you feel really rotten, or it can turn into a really big deal.

Justin:

What, um, what changes that? Like what, what determines what ... uh, it just the different, like, as you said, varieties of, of malaria?

Sydnee:

Part [laughs] part of it that. Uh, which one is, is more likely to cause problems, but just, uh, uh, like falciparum is classically what we think of as the worst. But just because you get falciparum doesn't mean you're gonna get that sick.

Justin:

Hm.

Sydnee:

Um, it depends, one on, uh, either more complications, sometimes the more times you have malaria. Um.

Justin:

[laughs] Oh man, that's rotten.

Sydnee:

I know, I know.

Justin:

That makes me really ... I didn't mean to laugh. It's just like, ugh. Like, to me, the idea of getting malaria is so, like, uh, just so unfathomable. Like, it breaks my heart to think that there are people who get it and there's like, "Ugh, again. Again with this."

Sydnee:

It, for, for a lot of people, it really is like that. Like, "Ugh, another sinus infection." Like the, the, in certain parts of the world, people get malaria that often, you know? And it can cause, if it's not treated appropriately and you're not getting it addressed, then it can cause chronic problems from that, or just sometimes it's, you know, either your first time getting malaria or who knows, and you have one of these catastrophic complications. Um, certainly people who are already sick would be more likely to have these problems, but, uh, uh, part of it is just bad luck as well.

Justin:

Mm-hmm [affirmative]

Sydnee:

Um, we've found evidence that the parasite, the plasmodium that causes malaria, uh, has been around for 30 million years, and we found it in mosquitoes trapped in amber, which I think is cool.

Justin:

Along with some [heavy southern accent] dinosaur DNA.

Sydnee:

[laughs] I knew you were gonna go down this road.

Justin:

[hevy southern accent] Dinosaurs.

Sydnee:

As soon as I was, I found this information and I thought, "Now, we're gonna have a Jurassic Park conversation."

Justin:

The bad thing is we thought it was just malaria, but then we crossed it with the DNA of a frog, and that's why malaria is so bad today.

Sydnee:

Because it's frog malaria?

Justin:

Because they crossed it with ... 'cause it's frog malaria and it's reproducing asexually.

Sydnee:

If it was frog malaria, it probably wouldn't infect humans. Probably. I mean that, that might not be so bad.

Justin:

[heavy southern accent] Dinosaurs!

Sydnee:

Um, there, you know, there was suggested that maybe some dinosaurs got malaria.

Justin:

Oh, really?

Sydnee:

Yeah. That is, that is ... 'cause there's been evidence that it was in reptiles, so yeah, maybe. Maybe.

Justin:

So this is not one of our new diseases that we've talked about before. This is a, this is a old, old one.

Sydnee:

No. It, it ... We likely first got it, you know, as it, as it evolved over time from chimpanzees and depending on which strain, in gorillas, uh, who passed it onto humans from, you know, like, again, from mosquitoes. Um, and malaria is, is interesting because it's probably evolved alongside us, with us.

Justin:

Mm-hmm [affirmative]

Sydnee:

Adapted to us and we have adapted to malaria. And it's actually shaped some of the other, um, chronic blood disorders that we see. Uh, for instance,

uh, sickle cell anemia, thalassemia, there's another called G6PD deficiency. Uh, these people are, are less likely to be infected by malaria.

Justin:

Hmm.

Sydnee:

And so, uh, the- there's a thought that when you, the reason that we still see these blood disorders, the reason that, you know, when they arose, you weren't selected against evolutionarily. Do you understand what I'm saying?

Justin:

Yeah.

Sydnee:

Is because they provided a selective advantage because you were less likely to get malaria if you had them.

Justin:

Right, that makes sense.

Sydnee:

So, so that's why ... that's part of why we see the prevalence of these diseases. Um, uh, in addition to our evolutionary history, malaria has, has changed the course of history in a lot of, like, like, our social and political history.

Justin:

Sort of like, um, what, what did we talk about last time? The, um, syphilis!

Sydnee:

Talking about syphilis?

Justin:

Syphilis, syphilis had a-

Sydnee:

Syphilis had that.

Justin:

... had an impact in that way.

Sydnee:

Tuberculosis has had that impact.

Justin:

Yeah.

Sydnee:

Um, but malaria certainly, because at, at times, if there would be an outbreak in certain parts of the world, it would, it would destroy whole city states. Um, armies were decimated by malaria at various points of different wars in history, um, specifically when we talk about, like, the Civil War.

Justin:

Mm-hmm [affirmative]

Sydnee:

There were as many people, uh, sick in bed with malaria as there were fighting and, you know, being injured in the war.

Justin:

Wow.

Sydnee:

Uh, it's depressed economies every time there would be a big outbreak of malaria, it, it was very hard on the economic situation. And there were ... There are theories that there were parts of countries that were uninhabited, especially coastal lands, for decades because people knew that it had something to do with water and they didn't know what specifically, so they stayed away from bodies of water.

Justin:

Hmm.

Sydnee:

So there was areas that it was thought, eh, nobody lives there and it's probably because of malaria.

Justin:

Hmm.

Sydnee:

We tend to think of it ... Like I kind of said, we tend to think of it as, like, a tropical disease now, but it was everywhere for a long time. Um, but like I said, you need some, you need standing water. That's one of the big things that you, when you're trying to address the malaria problem to eliminate sources of standing water.

Justin:

Mm-hmm [affirmative]

Sydnee:

Can be a big help. Um, and we've seen malaria kind of recede from, at least from the US and, you know, uh, the UK and Europe.

Uh, there is evidence that the ancient Egyptians had malaria.

Justin:

Yes, I would think so if the dinosaurs had it.

Sydnee:

Mm-hmm [affirmative]. We've found, we've found DNA evidence in, uh, mummies. And there's also evidence that they at least had some idea that they didn't want to be around mosquitoes.

Justin:

Oh, really?

Sydnee:

Yes. Uh, the Pharaoh Sneferu used to use bed nets. Cleopatra slept with a bed net. And I mean, maybe they just don't like getting bitten by mosquitoes.

Justin:

But still, I mean, that's ... Yeah.

Sydnee:

But I mean, if you do that every single night, you have to begin to wonder, like, I don't know. Do you know, do you know something? Do you suspect something?

Justin:

Well, yeah. But, like, at the same time, who would have nights where, like, maybe I'd like to get bit by mosquitoes tonight. Like, I, I mean, I think that

once you decided you would rather not be bit by mosquitoes, it's probably a life decision you're gonna live with.

Sydnee:

Maybe you just fall asleep first and you're like, "Oh, I don't wanna wake back up-

Justin:

Oh.

Sydnee:

... and get my bed net out."

Justin:

Get my bed net out. I think if you're Cleopatra, odds are pretty good you're not hanging up your own bed net, but, like, maybe.

Sydnee:

I don't know. It's kind of, I mean, like, you know how every night you get in bed and try not to brush your teeth and then I have to convince you to get back out of bed and brush your teeth?

Justin:

Yeah. Yep, yep, yep, yep, yep. I remember that.

Sydnee:

Maybe it's like that.

Justin:

Same principle.

Sydnee:

The, the builders of the pyramids were given a lot of garlic, and that's thought and it was an attempt to protect them from malaria.

Justin:

Hmm.

Sydnee:

Again, not sure that there was, that they knew any connection between what was gonna give them malaria. Just that somehow garlic would, uh, kind of like the strong smells, fight strong smells, push away the bad air.

Justin:

Sure.

Sydnee:

Uh, like I said, the, these cyclical fevers are really what make us think that this has existed so long, because Hippocrates wrote about this, uh, that there was an illness and that you would have these horrible, horrible high temperatures and then you would get better and then it would come again and that it could be deadly. But, uh, we think this is malaria. We're pretty sure that, uh, a- ancient Chinese physicians wrote about this as well and also wrote about the fact that patients who would get these high fevers tended to have large spleens often. So, again, more evidence that we think this probably is malaria.

Justin:

Mm-hmm [affirmative]

Sydnee:

Uh, the Romans called it the Roman fever. We think that when they reference that, they're talking about malaria, which I think is a little conceited.

Justin:

Mm-hmm [affirmative], yeah. It's very showy.

Sydnee:

And also dinosaur fever is better.

Justin:

Dinosaur fever would be ... If they had, like, A, called it with dinosaurs, and B, called it dinosaur fever, I, I would be slightly less concerned about catching malaria, I think.

Sydnee:

If it was called dinosaur fever?

Justin:

Yeah. 'Cause I, I, honestly, there was a period when, when I was like five or six where I did have dinosaur fever. A lot.

Sydnee:

I, I think a lot of little kids go through that phase.

Justin:

Yeah.

Sydnee:

Like a dinosaur fever phase.

Justin:

Not malaria, to be clear.

Sydnee:

No.

Justin:

I was just really into dinosaurs.

Sydnee:

[laughs] Um, the, uh, Pope Gregory IV, actually in response to the Roman fever, uh, being more prevalent in warmer times of the year, actually moved All Saints' Day from May to November, and in part it was because of malaria.

Justin:

Hmm.

Sydnee:

All Saints' Day, November 1st. All Hallows' Day.

Justin:

That's not one I know about. Is that a Catholic thing?

Sydnee:

It's the day after Halloween. All Saints' Day.

Justin:

No. Oh, okay. I know about All Saints the girl group? Is that the same thing?

Sydnee:

Not at all.

Justin:

Okay.

Sydnee:

All ... Halloween is called All Hallows' Eve.

Justin:

I think it's nice that they have a day. I think it's nice that All Saints has a day in their honor, though.

Sydnee:

No-

Justin:

They m- they made only a minor impact on the music landscape, but I'm glad that we're still remembering their contribution.

Sydnee:

Nothing like Allspice Day.

Justin:

[laughs]

Sydnee:

I expected more from that one.

Justin:

Yeah.

Sydnee:

No, but it's the day after-

Justin:

Allspice Day?

Sydnee:

Yeah.

Justin:

What was the joke?

Sydnee:

Allspice. It's a spice. All Saints, Allspice?

Justin:

I thought you were going for a Spice Girls thing 'cause we were talking about All Saints.

Sydnee:

No.

Justin:

Okay.

Sydnee:

No, it was talking about the seasoning. [laughs]

Justin:

Sure, yeah.

Sydnee:

Anyway, no it's the day after Hallo- All Hallows' Eve is Halloween and then the next day is-

Justin:

Uh, it must be a Catholic thing.

Sydnee:

The day of the hallows of the saints. The holy people.

Justin:

Normally the day after ... Normally the day after Halloween is the day that I have diarrhea from eating too much candy, so that's not ... I didn't know it was a holiday while I ... Fun.

Sydnee:

It's also a day where we celebrate all the saints. When it was younger, I dressed up as one of the saints at church. We all did.

Justin:

I don't do that in mine.

Sydnee:

We all had to dress up as a saint.

Justin:

We don't do that in mine. I don't think what to tell you, Sydnee!

Sydnee:

Okay, anyway.

Justin:

We don't do that. We didn't that when I was little. We didn't have saints.

Sydnee:

So there's some belief that maybe part of the reason we moved All Saints' Day to November is because of malaria. Um, the Romans also believed that it came from the air and specifically swamp air. So one of the solutions was move away from the swamps. Don't be close to the swamps. Which again, isn't a bad idea.

Justin:

Yeah.

Sydnee:

If you're looking for a place that mosquitoes are, so-

Justin:

It's nice that they figured out the water thing. Did they know it was from mosquitoes? Or did they-

Sydnee:

No.

Justin:

... it was just the water.

Sydnee:

Nope. Just something to do with the swamp air.

Justin:

Huh.

Sydnee:

Um, throughout, uh, Shakespeare's time, Shakespeare wrote about malaria quite a bit. Like, seven or eight of his plays he mentions malaria.

Justin:

Huh.

Sydnee:

Um, at this point, it would have been called marsh fever or the tertian ague. The ague is a, is a name we hear a lot for malaria.

Justin:

Hmm.

Sydnee:

Um, and as I kind of mentioned, it just ravaged different wars in our history, specifically the Revolutionary War and the Civil War, a lot of people, uh, had malaria. Congress actually during the Revolutionary War bought, uh, cinchona bark, which as we're gonna talk about, was one of the old and current treatments for malaria, um, from South America during the Revolutionary War in an attempt to combat malaria.

Justin:

I know about cinchona bark from, uh, uh, *Signature of All Things*.

Sydnee:

The Signature of Things. Mm-hmm [affirmative]. Um, and then World War I and World War II, there were certainly many people sick with malaria, although not as many people were dying from malaria at this point. Um, it, the bigger point is that it made a lot of, a lot of soldiers sick, and that was obviously a huge impact on many, many different battles in the war.

Um, by the 1890s, we figured out that it was spread by a parasite. We'd isolated the parasite. Uh, it was actually two medical students helped in this effort.

Justin:

Oh, congratulations, guys.

Sydnee:

Finding, the finding the parasite, like, reproducing inside mosquitoes and figuring out what was going on. Um, and then, and then of course that it was spread by mosquitoes we figured out after that.

Justin:

Excellent. Uh, I should mention, we, we just, uh, randomly mentioned *Signature of All Things*. That's a great novel by, uh, uh, our friend Elizabeth Gilbert. If you, uh, uh, like our show, you will probably like *Signature of All Things*.

Sydnee:

I think you absolutely ... It's a wonderful book. I would highly recommend it.

Justin:

Sydnee, I'm, I just did that little plug for Liz Gilbert's book, and now I'm, I got the urge to, to promote more things. Can you help me out?

Sydnee:

Uh, yeah. Let me show you the way to the billing department.

Justin:

Let's go.

[ad break]

Sydnee:

So why don't we talk about some treatments for malaria-

Justin:

Yeah.

Sydnee:

... now that we've kind of gone over the history?

Justin:

Let's, let's start digging out of this, this, this well.

Sydnee:

Okay. So first of all, what's interesting about the history of malaria treatments is that we kind of got it right a couple times without really intending to.

Justin:

Hey, go us!

Sydnee:

Um, the ... As far back when we go into, like, the ancient Chinese writings about malaria, uh, you find them recommending a certain herb, the artemisia herb. Um, what, what is so interesting about that is that that is the basis of some of the treatments we still use today for malaria.

Justin:

Hmm.

Sydnee:

So this was not wrong. Um, I don't know if soaking it in cold water and then eating it raw would work, but I know that they were on the right track. And, uh, what I love the most is that the, the, the recommendation of using this herb is from a book called *Emergency Prescriptions Kept in One's Sleeve*.
[laughs] So-

Justin:

[laughs] That's great title. That's ... I bet that was flying off the shelves.

Sydnee:

I don't recommend to my patients to keep any prescriptions in their sleeve, but I'm gonna start, I guess.

Justin:

Yeah. "Your sleeves look really baggy." "Well, I've been feeling under the weather lately."

Sydnee:

[laughs]

Justin:

"Got some Emergen-C in here.

Sydnee:

I got some cough drops.

Justin:

I got some, uh, some Bramble Berry essence.

Sydnee:

Be careful what you carry in your sleeves, though.

Justin:

Yeah.

Sydnee:

It's a crazy world out there now.

Justin:

[laughs] Lot of sleeve thieves. You have to be care-

Sydnee:

You gotta watch it.

Justin:

People are such ... You notice somebody eyeing your sleeves, you just head, head on down the road.

Sydnee:

[laughs]

Justin:

They're up to no good.

Sydnee:

They're, they're after your blood pressure medication. Um.

Justin:

[laughs] Your bark, depending on what era you're in.

Sydnee:

Or the bark you have in your sleeve. Uh, there was an early understanding. Uh, we kind of talked about that people knew that water had something to do with it and spe- like, like, swamps, so rice paddies came under fire in China. And so there were some recommendations like-

Justin:

Oh, I bet those things were just, like, rife with mosquitoes.

Sydnee:

Yeah. And so there were some thoughts, like, maybe we should stop doing this, but of course that was a huge economic problem, so it, I wasn't stopped, but there was debate. You know, like what, what do we do because we need ... the rice was a big, you know, still, I, I imagine, a big feature of the economy and-

Justin:

Yeah.

Sydnee:

Um, so there was some question as to whether that should be stopped. I, uh, similarly, draining swamps was something that we suggested in various times at various places in history. Like, I don't know, if we drain all the swamps, will people start ge- stop getting sick?

Justin:

I don't know that a lot of good comes from swamps.

Sydnee:

[laughs]

Justin:

Like, f- from a human being point of view. It, it seems like-

Sydnee:

There are, there are people in Florida right now who are losing their mind at you saying that.

Justin:

Well, no. What they're thinking is like, "You know what, Justin, that offended me, but then I realized, like, the only thing that happens in swamps is alligators are there, and sometimes people hide bodies there." Those are the two things that happens in swamps. And those sweet air boats, but I don't know where you get those.

Sydnee:

Okay. I, I will tell you that I went to many school trips when I was younger and lived in Waycross, Georgia to the Okefenokee Swamp-

Justin:

Mm-hmm [affirmative]

Sydnee:

... and it was very cool and there were-

Justin:

One guy's like, "Yeah, yeah, yeah, Okefenokee, represent!"

Sydnee:

I loved going to the Okefenokee Swamp 'cause you saw alligators.

Justin:

"You tell them!"

Sydnee:

You rode in a boat, and then there were these leaves that you would, like, they would pull off plants and rub together and soap ... there would be soap would happen from the leaves. I loved going to the Okefenokee Swamp.

Justin:

That sounds fun. I mean, I'm just like that sounds fun to me.

Sydnee:

So be careful when you diss swamps. [laughs]

Justin:

Sorry swamps.

Sydnee:

Uh, you know-

Justin:

"I used to like *Sawbones*, but that show was so anti-swamp."

Sydnee:

[laughs] In the Middle Ages, uh, they tried all kinds of weird bad ideas for treating malaria, as we did for everything, right?

Justin:

Yeah.

Sydnee:

Mi-

Justin:

Middle Ages was really bad.

Sydnee:

Uh, we tried blood letting.

Justin:

You really can't get much worse than the Middle Ages.

Sydnee:

Hmm.

Justin:

This is our apex of, like, not knowing what we're doing crossed with our willingness to just do whatever.

Sydnee:

Just do something. I don't know. Cut yourself. Drill a hole in your head, which we tell you not you like, every time.

Justin:

Literally.

Sydnee:

Like, but, people did that. Um, amputate a limb!

Justin:

It's like they're not even listening to our podcast.

Sydnee:

Um, try some witchcraft. Take some belladonna. That won't help.

Justin:

Pull a sword out of a rock. Like, what are you guys doing?

Sydnee:

No, uh, let's, let's work out your nativity chart with astrology-

Justin:

[laughs]

Sydnee:

... and then you what, what planet is causing your malaria.

Justin:

Middle Ages-

Sydnee:

I don't know how that fixes it, but-

Justin:

Middle Ages was really bad. At least before that, we're like, "I don't know, homie. Figure it out or something. Or don't. I don't know. We don't know anything."

Sydnee:

[laughs] The most interesting, and Justin, you probably know part of this because you, you read the *Signature of All Things-*

Justin:

But you first.

Sydnee:

... is the story of the cinchona tree. So it's funny, 'cause if you read about how did we figure out this ci- cinchona tree, which has also been called the, the fever tree, um, before it cures fevers. Uh, the, the way that we figured out how, how did we ever think this bark might help us against this horrible disease.

Justin:

Mm-hmm [affirmative]

Sydnee:

Um, the story is that there was an earthquake that caused a bunch of cinchona trees to fall into a lake, and that the water in the lake was really bitter after that, flavored by the cinchona, and nobody would want to, nobody wanted to drink it, except there was one guy who was really sick, and so he had a fever, he was really thirsty, so he drank it 'cause-

Justin:

What does he care?

Sydnee:

... he needed water, he was very thirsty, and he got better. And that's how we figured out that cinchona bark-

Justin:

That is, that story is just wild enough to make total sense.

Sydnee:

Uh, it's interesting. I don't-

Justin:

Everything in that adds up.

Sydnee:

I don't have a better thought as to how we would've ever thought to, to get tree bark and-

Justin:

I don't know how we figured out any of this stuff, right? There's gonna be some story like that for all of these things, right?

Sydnee:

Yeah. Some, some just random happenstance and then-

Justin:

You- you're making, you're making, um, uh, metal springs for weapons and one of them gets knocked off of a shelf and you see it very pleasingly coil off the shelf onto the floor and you think ... that's a toy. Slinky. Born.

Sydnee:

[laughs] That's, and this is on the same level I think as the Slinky.

Justin:

Basically.

Sydnee:

It's kind of like Sean Connery in *Medicine Man*, you know? It was the ants.

Justin:

Mm-hmm [affirmative]

Sydnee:

Sorry, spoilers. [laughs]

Justin:

[laughs] Spoilers for *Medicine Man*.

Sydnee:

Uh-

Justin:

Stayed tuned, we're spoiling *Romancing the Stone* next.

Sydnee:

[laughs] Uh, there ... Miners also took this when they go into, like, cold, damp mines 'cause it would stop, they thought it stopped shivering which is probably a reference to the fact that it stopped the rigors that are associated with malaria.

Justin:

Hmm.

Sydnee:

Um, it was used by the, the native, the people native to Peru, and then the Spanish missionaries found it when they came to Peru, um, and started noticing that people would use this local, uh, tree bark to treat this awful fever that everybody got and it worked and so they started exporting it all over the world. And it does work because it has the alkaloid quinine in it, which quinine is still used to treat malaria today. Um, so that's pretty cool.

Justin:

That is cool.

Sydnee:

Yeah, and the, and, and so that, this bark was sent, um, Jesuit bark was the same name or, you know, fever tree. All kinds of the same thing. It was sent all over the world to treat malaria 'cause it was a big problem. Um, it's interesting 'cause it, uh, there, one of the other big treatments you read about is Warburg's tincture-

Justin:

Mm-hmm [affirmative]

Sydnee:

... which was created in 1934 by a German doctor, um, which also contained quinine so, like, it kind of took over for a while as the big treatment for malaria, but I mean, it had quinine in it as well, so we're still, we're still using quinine. But it was used hugely by the British and Austrian empires. Um, also this is in tonic water, quinine.

Justin:

Oh, yeah.

Sydnee:

Just as a side note, so-

Justin:

'Cause you were drinking it a lot when you were pregnant for your, uh, for your leg, restless leg.

Sydnee:

Yes. I was. Tonic water, yes.

Justin:

That's unrelated to malaria.

Sydnee:

Yes, quinine, quinine has been used for leg cramps and restless leg and that kind of thing, although I would, if you're considering that, talk to your doctor. Be very careful, um, with, uh, not so ... I mean, tonic water, you'd have to drink a whole lot of it to cause yourself problems, but there are a lot of supplements over the counter, on a side note, that have quinine in them and I you can get too much, and it's called cinchonism 'cause of the tree and you can get poisoned. So be careful.

Justin:

Oh, good to know.

Sydnee:

Um, once we figured out the parasite, as I mentioned, the 1890s throughout the 1900s, we developed all kinds of new medications. And I won't go through all the medications we have today for malaria, but, but we have quite a few. Um, the biggest problem, though, is as we have developed new medications, the malaria parasite is wily and it becomes resistant to them almost as soon as we make them.

Justin:

Mm-hmm [affirmative]

Sydnee:

So, um, that's why if you're traveling somewhere in the world, w- the first question you should ask your doctor is do they have malaria there and what medication can I use while I'm there to prevent it when I go there because it's different everywhere you go in the world. Um, and moving onto to- to today, malaria is still a huge problem. Um, like I said, we don't think of it that way I think here because we don't see it in the US.

Justin:

Right.

Sydnee:

You know? We, I, I know for me, it was something that we talked about in medical school, I, I was interested in it because I had an interest in international medicine. Um, but then I didn't see it until I went to Malawi. Um, and then we had a case here, which was weird.

Justin:

Yeah, that is weird.

Sydnee:

But anyway, there's still, like, 225 million cases each year. Um, 800,000 people still die of malaria and there are, there are about 100 different countries worldwide where it's still endemic, largely in Africa. Um, it's a huge cause of, of childhood death as well, and like I said, there are many drugs, but there's still much resistance to them. Um, bed nets are one of the biggest solutions to this, so simple but effective. Just don't get bitten by mosquitoes. And, um, this is important if you're gonna travel anywhere in the world. Go talk to your doctor, especially if you have somebody who does, like, a travel clinic like I offer.

Justin:

W-

Sydnee:

Where you can ask about what meds you might need.

Justin:

And, uh, you can, you can go donate. Go, go donate some bed nets to help people who are still, uh, suffering from this. You can go to nothingbutnets.net and you can buy some nets and, uh, help people out there.

Sydnee:

'Cause it's really that simple. I mean, the, the ideas historically of draining swamps and Cleopatra sleeping under a net probably was more effective at fighting malaria than just about anything else we, we could do.

Justin:

So go do that and then feel a little better, uh, uh, uh, about the problem 'cause you're, you're helping to combat it.

Uh, thank you to the maximumfun.org network for, uh, having us as a part of their, uh, family. They got a lot of great programs that you can go listen to. Uh, uh, and we would recommend you do that right this sec. We got the Max Fun Drive coming up, so we're gonna ... you're gonna have some, uh, some, uh, uh, a lot of chances to support the network and get some cool stuff in return, so that's pretty groovy.

Sydnee:

Thank you to The Taxpayers for our theme song, *Medicines*.

Justin:

Mm-hmm [affirmative]. And, uh, thank you to people tweeting about the show. We're @sawbones on Twitter, so you can, uh, you could tweet about us and be like, uh, Sparkly Pawnee, uh, Lana K., Maelynn Carlson, We Are Goose, Foxy Love, Kelly Wardell, Amy, uh, KLM, David Cooper, uh, Mundicious, Aimes, uh, Meg, Dan and Glynn over Games by Playdate, uh, Adrian Mejia. Mejia, Mejia. I think Mejia. That sounds right. Adrian Mejia.

Sydnee:

Mm-hmm [affirmative]

Justin:

Uh, Dylan Synott. So many others. Thank you so much for tweeting about the show. You can follow us on Twitter if you would like to do so. And thanks to you for listening. Thanks to you, Sydnee for being here. I really appreciate you.

Sydnee:

Thank you, Justin, for inviting me to your office.

Justin:

[laughs] Our podcast. Uh, uh, uh, until, uh, next time, probably on a Tuesday or Wednesday, uh, I'm Justin McElroy.

Sydnee:

I'm Sydnee McElroy.

Justin:

As always, don't drill a hole in your head.

[theme music plays out]

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